

## DESCRIPTION

SiC Schottky Diode has no switching loss, provides improved system efficiency against Si diodes by utilizing new semiconductor material-Silicon Carbide, enables higher operating frequency, and helps increasing power density and reduction of system size /cost. Its high reliability ensures robust operation during surge or over\_voltage conditions.

## FEATURES

- Max Junction Temperature 175°C
- High Surge Current Capacity
- Positive Temperature Coefficient
- Ease of Paralleling
- No Reverse Recovery/No Forward Recovery

## MECHANICAL DATA

- Case: JEDEC TO-247AC
- Molding compound meets UL94V-0 flammability rating
- Terminals: Lead solderable per J-STD-002 and JESD22-B102
- Polarity: As marked
- Mounting Torque: 10 in-lbs maximum

## TYPICAL APPLICATIONS

- General Purpose
- SMPS, Solar inverter, UPS
- Power Switching Circuits

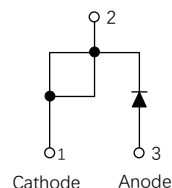
## KEY PERFORMANCE AND PACKAGE PARAMETERS

Type	$V_{DC}$	$I_F$	$Q_c$	$T_{j,max}$	Package
SC10170P	1700V	10A	126nC	175°C	TO-247AC

TO-247AC



Base common cathode



## MAXIMUM RATINGS

(Ratings at 25°C ambient temperature unless otherwise specified )

Parameters	Symbol	Value	Unit
Maximum repetitive peak reverse voltage	$V_{RRM}$	1700	V
Continuous forward current for $R_{th(j-c)}$	$I_F$	10( $T_c=160^{\circ}C$ ) 21( $T_c=125^{\circ}C$ ) 40( $T_c=25^{\circ}C$ )	A
Non-repetitive forward surge current (Half-Sine Pulse, $t_p=8.3ms$ )	$I_{FSM}$	100 ( $T_c=25^{\circ}C$ )	A
$I^2t$ value	$I^2t$	41.5( $T_c=25^{\circ}C$ )	$A^2S$
Power dissipation for $R_{th(j-c,max)}$ ( $T_c=25^{\circ}C$ )	$P_{tot}$	204	W
Operating junction temperature range	$T_j$	-55...175	$^{\circ}C$
Storage temperature range	$T_{stg}$	-55...175	$^{\circ}C$

## THERMAL CHARACTERISTICS

Parameter	Symbol	Value		Unit
		Typ	Max	
Diode thermal resistance junction-case	$R_{th(j-c)}$	0.62	-	K/W

## ELECTRICAL CHARACTERISTICS (T<sub>j</sub>=25°C Unless otherwise noted)

Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
DC blocking voltage	V <sub>DC</sub>	T <sub>j</sub> =25...175°C	1700	-	-	V
Diode forward voltage	V <sub>F</sub>	I <sub>F</sub> =10A T <sub>j</sub> =25°C	-	1.40	1.70	V
		I <sub>F</sub> =10A T <sub>j</sub> =125°C	-	1.75	2.50	
		I <sub>F</sub> =10A T <sub>j</sub> =175°C	-	2.00	2.70	
Reverse current	I <sub>R</sub>	V <sub>R</sub> =1200V T <sub>j</sub> =25°C	-	-	20	uA
		V <sub>R</sub> =1200V T <sub>j</sub> =125°C	-	-	100	
		V <sub>R</sub> =1200V T <sub>j</sub> =175°C	-	-	200	

## DYNAMIC CHARACTERISTICS(at T<sub>j</sub>=25°C,unless otherwise specified)

Parameter	Symbol	conditions	Value			Unit
			min	typ	max	
Total capacitive charge	Q <sub>C</sub>	V <sub>R</sub> =1200V		126		nC
Total capacitance	C	V <sub>R</sub> =0V,f=1MHz		1220		pF
		V <sub>R</sub> =800V,f=1MHz		49		
		V <sub>R</sub> =1700V,f=1MHz		47		
		T <sub>j</sub> =25°C				

FIG.1-FORWARD CURRENT DERATING CURVE

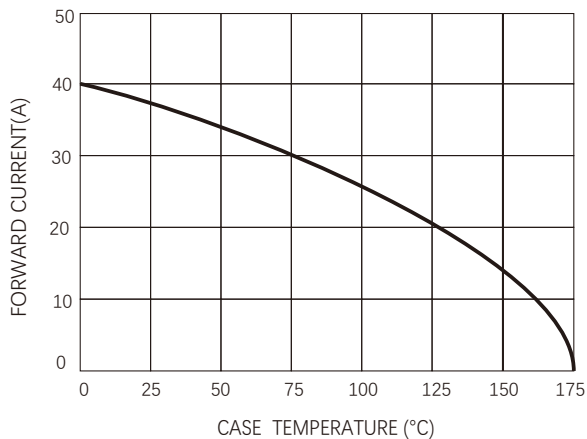


FIG.2-TYPICAL JUNCTION CAPACITANCE

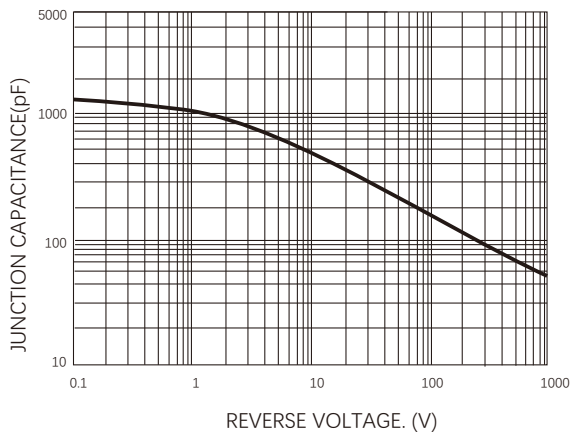


FIG.3-FORWARD CURRENT DERATING CURVE

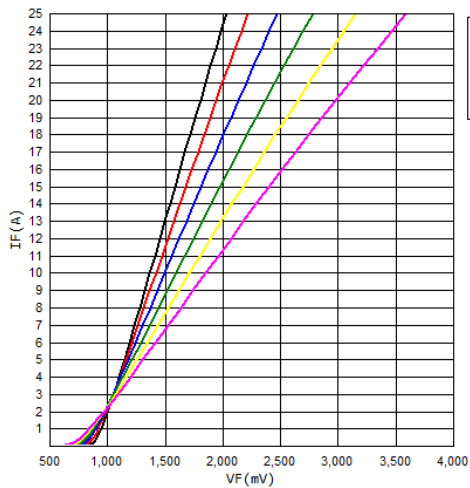
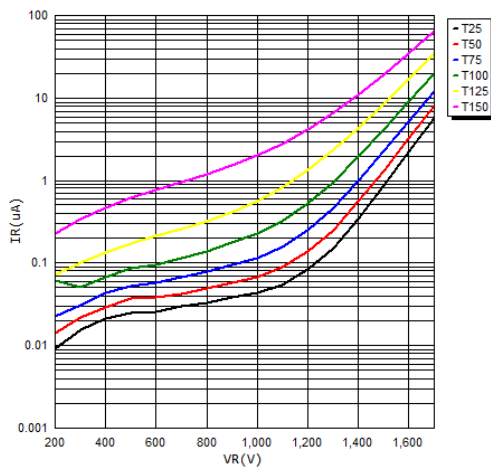
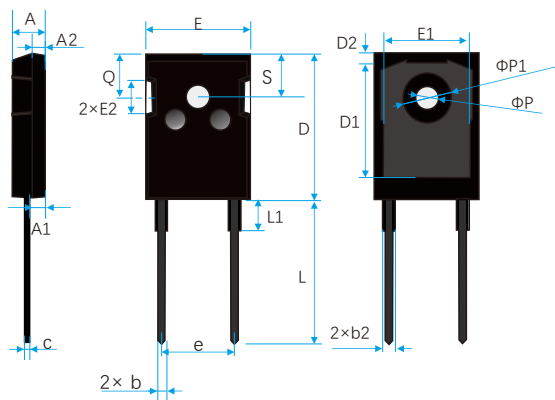


FIG.4-REVERSE CHARACTERISTICS



## TO-247AC



Symbol	millimeter		
	Min	Typ	MAX
A	4.70		5.30
A1	2.21		2.59
A2	1.50		2.49
D	20.50		21.30
E	15.48		16.24
E2	4.30		5.50
e		10.92	
L	19.80		20.30
L1	4.10		4.50
ΦP		3.50	
Q	5.38		6.19
S		6.14	
b	0.99		1.40
b2	1.65		2.39
c	0.38		0.89
D1	13.07		1.35
D2	0.51		
E1	13.30		
ΦP1		7.20	

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